MAY · 1961

EOF electricity on the farm

SOUTHEAST EDITION

Here's how to make a cash-grain crop cash-green. Drying and storing push profits up. *See pg. 14*

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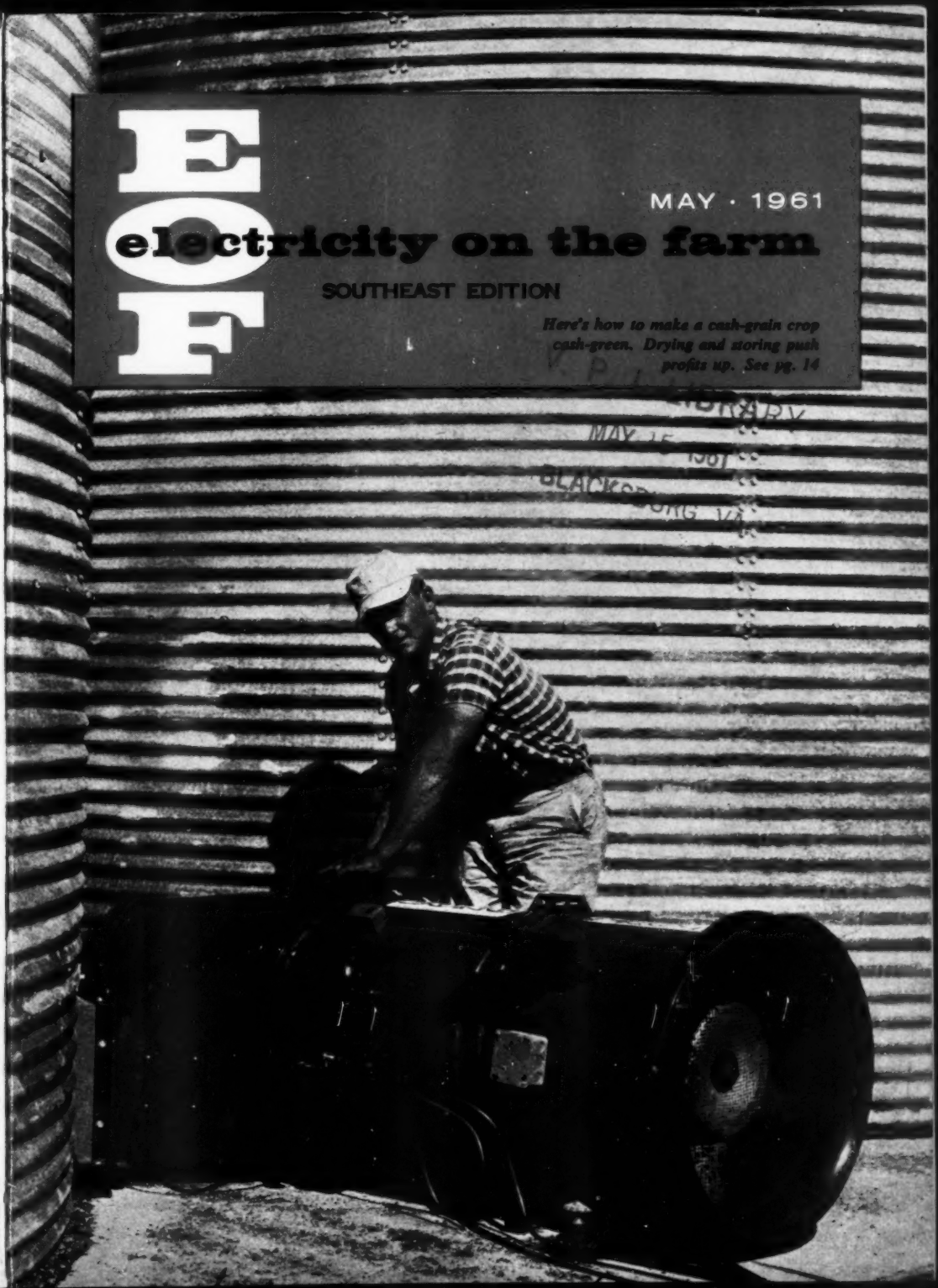
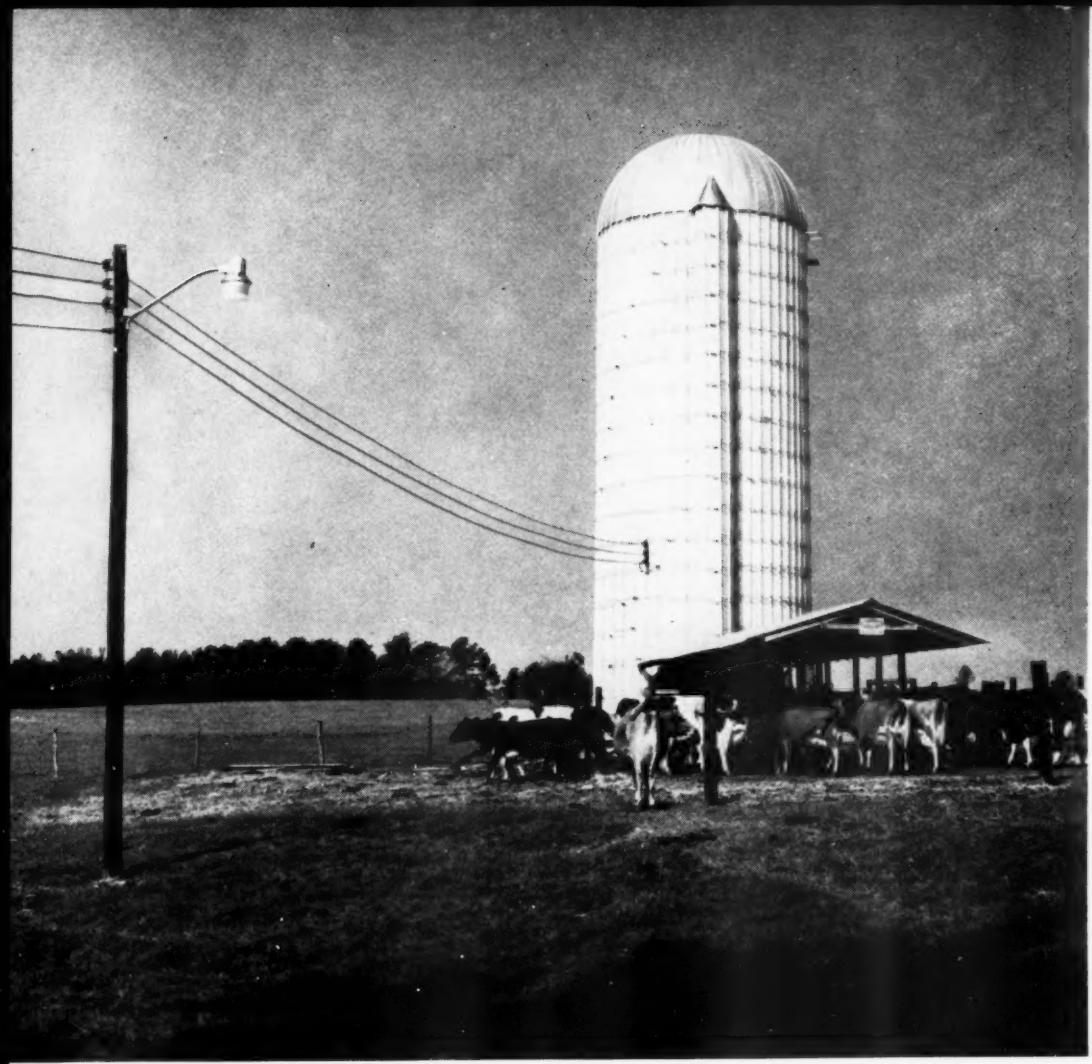
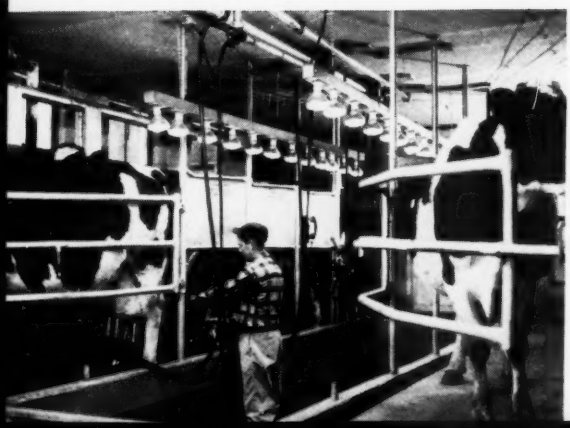






EFFICIENT PUSH-BUTTON FEEDING frees up the farmer's time for other activities that bring in extra profits. For example, the modern automatic silo shown above is equipped with an electrically driven unloader and auger feeder. Dozens of other electrically powered devices let fewer hands do more work in less time on farms of all sizes and types.

ECONOMICAL HEATING. Lamps spot heat right where the farmer needs it, and only *when* he needs it. He saves the cost of pre-heating before milking and eliminates heating the entire area. Here electric milkers let one man handle the whole milking job.

On the farm 8¢ worth of electricity saves $8 worth of labor

Here's why electrically powered equipment can mean substantial profits for the modern farmer

Never before has electricity been such an important part of the business of profitable farming. For example, the use of electricity on the farm has increased 224% on a national average over the past 20 years. And during this same period, farm labor has become scarcer as the national hourly wage rate climbed 400%.

But while labor costs have risen, the average kilowatt-hour rate for electricity has decreased 25%. In fact, figures compiled by the Edison Electric Institute from a nation-wide farm survey show that today 8¢ worth of electric power does the equivalent work of $8 in manual labor.

So the farmer who does all the jobs he can with modern electric machinery is the businessman who's getting the most work out of his time and cash investment.

And farmers' wives know how much time and work electric appliances save them around the farm home. Comfortable, even electric house heating eliminates fuel dirt and the work needed to clean it off walls, curtains and upholstery. Farm mothers find more time free to spend with their growing children, with the help of electric washers, clothes dryers, dishwashers and a host of other appliances.

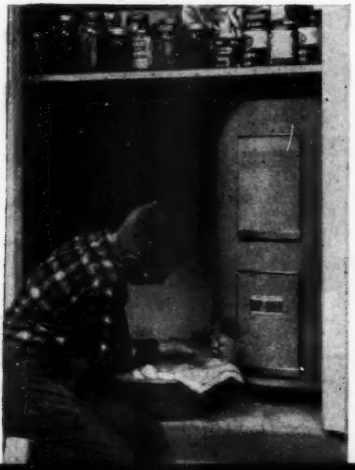
An analysis of your farm operations will demonstrate where electricity can save you time, money and labor. To increase your profits through electric help, just phone the electric utility company in your neighborhood. A Farm Representative will visit you at your convenience, and at no obligation.

YOU FARM BETTER ELECTRICALLY

Sponsored by Edison Electric Institute

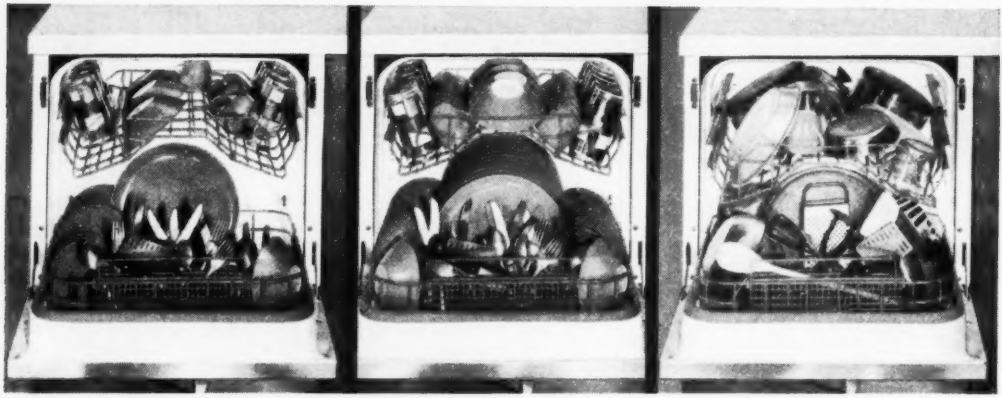
The association of investor-owned electric utility companies

CONVENIENT WATER HEATER INSTALLATION is possible because an electric water heater requires no flue or vent. It can be placed in a closet, under stairs or even in the attic. And its quick recovery always assures plenty of hot water.



FLAMELESS ELECTRIC CLOTHES DRYING IS ODORLESS. Housewives find that fuel odors can never cling to their laundry. And even delicate nylons, lingerie and wash-and-wear fabrics always come out soft and fluffy.

FULL HOUSEPOWER WIRING provides plenty of circuits with convenience outlets and switches all through the house to run appliances at top efficiency. It's more fun to broil snacks, perk coffee right where the activity is. And blown fuses are no longer a problem.



Push this button and breakfast, lunch and snack dishes get a short power rinse that removes food particles without hand rinsing. Holds and stores dishes until the "load as you like" racks are filled. Enjoy the convenience of once-a-day dishwashing!

Famous "Guided Action" power wash arm scrubs dishes with a power prerinse and wash, or a double wash—then rinses three times. Detergent and rinsing agent dispensed automatically. Dishes then dry better than "by hand," with Flo-Thru hot air drying.

Pots and pans get their own individual treatment. The KitchenAid dual wash and triple rinse soak away baked-on foods. Oversize roasting pans are no problem with the 2-position adjustable upper rack. Ideal for "quick-dry" items, too.

push a button—
dishwashing's done
by KitchenAid®
dishwasher

And there's more for you in the new Superba VariCycle. The finest, most advanced dishwasher ever designed—the one that dares them all to match it. Unparalleled quality and performance. Vari-Front Panels include wood, stainless steel, antique copper, wood hue copper tone, gleaming white—or use plastic laminates or other materials to meet any decor requirements. King-size capacity for 12.

See all the other great KitchenAid models, including the beautiful "Imperial" Series and the budget-priced "Custom" Series. Remember, there's a KitchenAid for every kitchen...every budget.

KitchenAid Home Dishwasher Division
The Hobart Manufacturing Co., Dept. KEF, Troy, Ohio
In Canada: 175 George St., Toronto 2.

Too much to do... too little time?

you deserve a KitchenAid.

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SOUTHEAST EDITION

electricity on the farm

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A Second Well

Just as we do with many other things, some of us take our water supply for granted until trouble develops and we have no water. Then we realize how important water is for both the household and the farm.

A few weeks ago we visited a dairyman who has two wells and two pumps. It was a refreshing experience. This man told us that for years he had only one well, and was fortunate that he never lacked water. But then came a drought season, and he began to worry about what he would do if that well failed. Worry turned into action and he put in the second well as a sort of insurance. Once he had it, he began to make additional profitable use of water. For example, he irrigates temporary pastures to get grazing crops up and growing on schedule. He has greater peace of mind too, somewhat akin to that of the two-car family.

We think a stand-by water source is something all poultry and livestock farmers will want to do some "worrying" about—if, of course, they don't already have one. ALBERT MORRIS

Plan Your Operation to Make Money

Almost everything in this day and age, from jet planes to aspirins, is supposedly better for one or more of the following reasons: it's faster, it's more powerful, it's more efficient, it's cheaper.

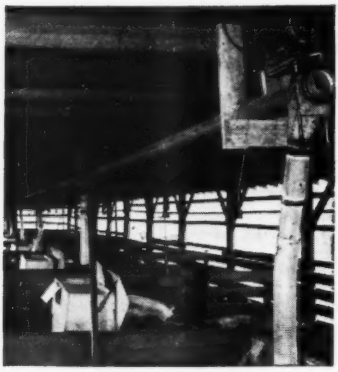
Maybe these criteria are all right when shopping for a consumer item. The situation is different, though, when you invest in production equipment or supplies. Regardless of your type of farm, it's all-important that a piece of equipment, building, fertilizer, seed or feed makes money for you if it's going to be a help.

You won't skimp on top-quality feed or fertilizer because you don't want to jeopardize production. By the same token, you shouldn't skimp on mechanized buildings to handle livestock, produce, feed and wastes. Don't lose at one end what you gained at the other.

As a smart operator, you'll do one more thing—you'll bring in professionals to help plan your farmstead engineering. Agricultural engineering service is available from your power supplier, your extension service, your better farm equipment dealers and private consulting firms. This service can help you make money. Use it when you make your plans. HUGH J. HANSEN

Mill used by Oswalds is powered by 2 hp motor, often runs continuously to provide feed for all livestock. Augers supply ingredients from bins outside.

Three lengths of 4-inch auger are connected in series to deliver feed to self-feeders in hog building. Each 48-ft. length is powered by ¾ hp motor.



The Oswalds' 400 hogs get their feed

Ground, Mixed and Delivered

Feed processing installation and pens for hogs (far right) are compactly arranged. Bins hold grains and supplements, mill is in small shed to left of driveway. Bin over driveway holds finished feed, can be used for other livestock on farm by gravity-unloading into truck parked below.

Here is a feed mixing, grinding and handling operation that mechanically moves ingredients from storage bins to hammermill, proportions and blends them into the desired ration, and delivers the finished feed to self-feeders that serve 400 hogs.

Or the flow of feed can be diverted to other livestock on the farm by filling a 1-ton holding bin mounted on the roof. This location allows trucks or wagons to drive underneath for gravity loading of rations mixed for cattle or breeding hogs.

Original Use Expanded

So successful has the entire on-farm feed processing installation been that the owners, Ben and Johnston Oswald of Allendale, S.C., have added two supplement bins to their original setup so that they can mix a wider variety of rations. Their grains are home-grown oats and corn.

Their 2 hp mixer-grinder requires nearly two hours to turn out a ton of feed. But they have found it will run continuously, and no one has to stand watch while it is operating. The built-in timer can be set to operate it for a specific interval. If any ingredient fails to reach the mill in proper supply, micro-switches stop the whole operation.

A similar switch stops the mill when the holding bin is filled. From this bin, a 4-inch auger extends 144 feet to deliver the feed into self-feeders. Actually, the auger is in series—three 48-ft. sections, each driven by a ¾ hp motor. These motors are controlled manually, and cut-offs at each self-feeder are opened or closed as necessary in the final step of getting feed to the hogs.

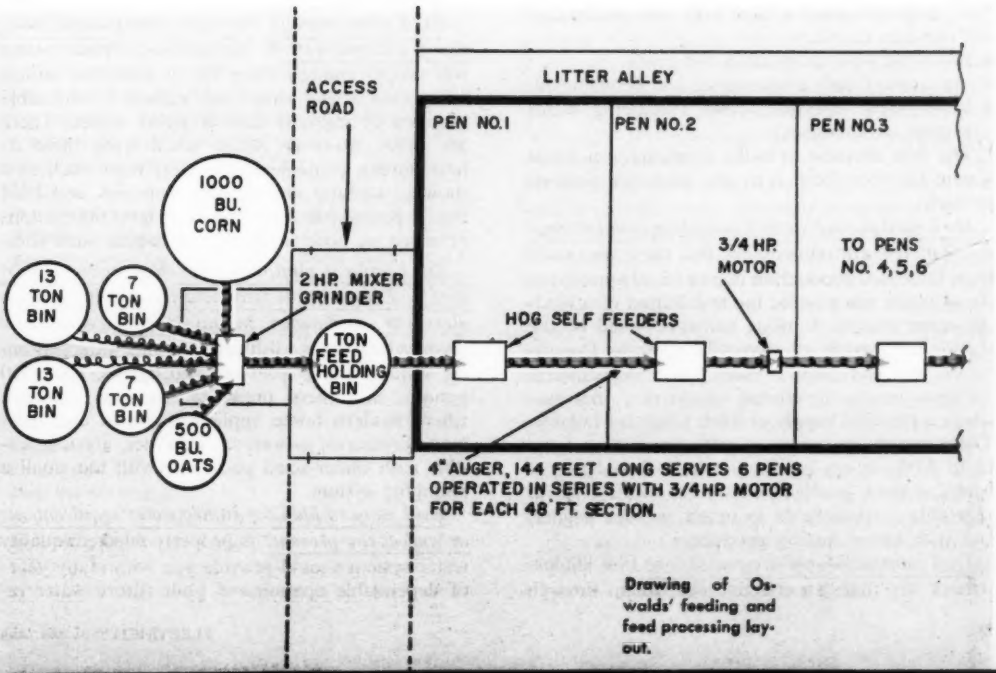
Switching from one ration to another involves resetting the dial controls on the mixer-grinder so that the proper amount of each ingredient will be metered. Where there is change to a different supplement, it is necessary to connect the motor operating the auger from that bin into the mixer-grinder control panel by inserting a plug into a receptacle.

Feed processing can go on during the day, while the Oswalds are about their field work, or it can continue into the evening while they relax at home. The small mill works long hours to do a big job for them, and in doing so gives them a good return on their investment.

Initial planning of the system was done by H. P. Lynn, extension agricultural engineer at Clemson College, after the Oswalds decided to market some of their grain crop through a feeder-hog operation. □□

AUTOMATICALLY

By ALBERT MORRIS



Drawing of Oswalds' feeding and feed processing layout.

Peak use of water for both home and farmstead comes during a 2 or 3-hour period in morning and late afternoon. Water system that can pump a day's supply in 2 hours will handle peak needs.

IS YOUR FARM 'THIRSTY'?

How much water should you have available on your farm? You can plan a water system that will barely meet your minimum requirements. Yet with proper planning and surprisingly little extra cost, you can have a water system with enough capacity and pressure to insure

- increased farm production and profit
- maximum family convenience and better health
- lower farm operating costs (including water system maintenance)

The first decision to make in planning a water system for your farm is to ask these questions of yourself:

Do I want enough water to assure maximum production? It is entirely possible that the extra profits from increased production due to an adequate supply of water can pay for the installation of a modern water system. Various bulletins issued by the U. S. Department of Agriculture, state Departments of Agriculture and State Agricultural Colleges report significant production increases where a plentiful supply of fresh water is available. These include increases in milk production from 10 to 22%, in egg production from 8 to 10%, in beef and pork production from 10 to 20%, farm vegetable garden yields as much as 50% higher, and with better quality produce.

Do I want additional fire protection? Fire Underwriters' say that "an effective fire stream through a small nozzle (3/16"-1/4") requires at least eight to ten gallons a minute (480 to 600 gallons an hour), which quantity should be available for at least two hours."

Do I want enough water to take care of peak use requirements? A 300-gallon-per-hour pump will supply enough water for at least two outlets being used at the same time without a noticeable pressure or capacity loss at either outlet. There are times, however, when you'll want three or four outlets available at the same time, such as a shower, washing machine, kitchen sink and barn tap. A pump that can produce at least 600 gallons or more an hour is needed to handle such uses.

Do I want a pump that develops enough pressure and capacity to satisfactorily operate modern electrical appliances in my home? Automatic washing machines, dishwashers, and water softeners require pump pressure settings of 30 to 50 pounds, and these pressures are now common where modern home appliances are in use. Adequate pressures, as well as capacities, are not possible with under-sized pumps or with too small a plumbing system.

Do I want to plan for future water requirements as well as the present? A properly selected, quality water system should provide you with many years of dependable operation if your future water re-

HERE'S a handy form for determining your farm's water requirements. Be sure to take future requirements into consideration as well as present needs. Write the number in the blanks and multiply by the gallons required per day for each.

Members in family: _____	**times 50**	_____ **gal**
Automatic laundry loads per day: _____	**times 45**	_____ **gal**
Showers per day: _____	**times 25 (avg.)**	_____ **gal**
Milk cows: _____	**times 35**	_____ **gal**
Dry cows or beef animals: _____	**times 15**	_____ **gal**
Hogs: _____	**times 4**	_____ **gal**
Horses: _____	**times 12**	_____ **gal**
Sheep: _____	**times 2**	_____ **gal**
Poultry: _____	**times 4 (for each 100)**	_____ **gal**
Homes for lawn sprinkling, garden irrigation, car washing, and other outdoor uses: _____	**hours times 300**	_____ **gal**
Other special water needs		_____ **gal**
	Total Daily Requirements	_____ **gal**
To find recommended water system capacity per hour, divide Total Daily Requirements _____	**by 2**	_____ **gal**

quirements are taken into consideration. Do you plan in the future to add more livestock . . . new appliances . . . more individuals in the family . . . increased water outlets, such as drinking cups in the barn, etc.? Providing for these future water requirements when you plan your system is much easier than trying to add them in makeshift fashion when the needs arise at a later date.

Do I want my pump to give service with a minimum attention and repair? Pump authorities recommend about two hours of actual pumping a day for peak operating efficiency from an automatic water system. Of course, a small pump which operates four hours a day will last probably half as long, and operating costs are higher. Determining the exact amount of water necessary for your own farm is not too difficult. It varies, of course, with each situation. The average farmer can use the information in the following table to determine approximate daily water needs:

HOME	
Each member of the family (for normal purposes)	**50 gal**
Automatic washers (maximum per load)	**45 gal**
Automatic driers (no vent, water condenser type)	**40 gal**
Shower	**15-30 gal**
Dishwasher	**9 gal**
Lawn or Garden Sprinkling (per hour)	**300 gal**
FARM PRODUCTION	
Each cow producing milk	**35 gal**
Each dry cow or beef animal	**15 gal**
Each hog	**4 gal**
Each horse	**12 gal**
Each sheep	**2 gal**
Each 100 chickens	**4 gal**

Editor's Note: These figures do not necessarily provide ample needs for special water uses such as cleaning bulk milk coolers, pipeline milkers, flushing milking parlors, milkrooms, hog farrowing pens, evaporative cooler units for poultry or livestock and vegetable or fruit processing. These requirements should be determined individually and provisions made for same.

Nearly 80% of a farm's daily water supply use is during a two or three hour period. This is usually during the morning and late afternoon when the kitchen, bath, and outside outlets may be in use at the same time. Your water system should be planned with a capacity that will handle your daily water needs over a two hour period.

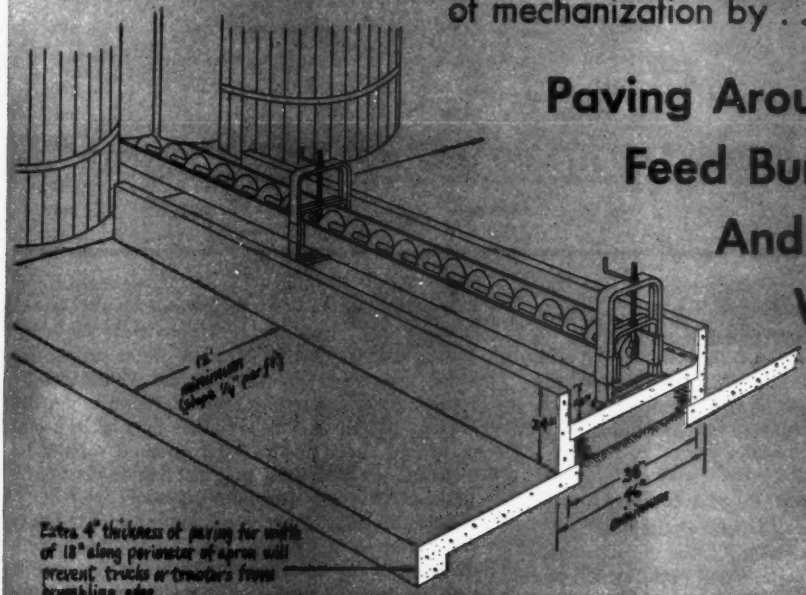
Selection of a large enough pump is not the only consideration in making sure that your water requirements can be supplied. Several other factors can hamper your plans for an adequate water supply and should be considered. These are:

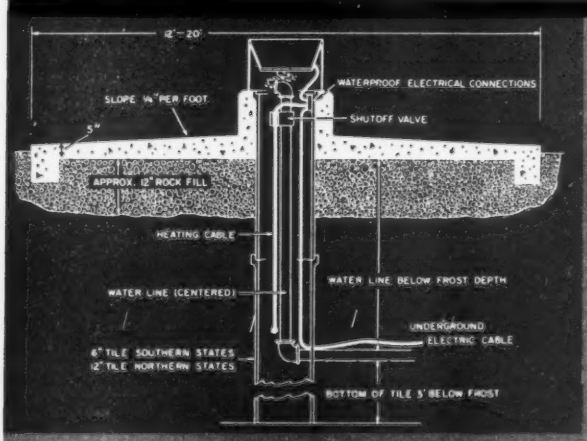
- Weak wells. It is possible that your well does not have sufficient yield or rate of flow to supply the amount of water you need over a two-hour period. If so, a large pressure or storage tank may be the corrective measure.
- Small diameter wells. If you are drilling a new well, it should have a diameter of at least four to six inches. Such a well will permit the installation of a pump large enough to supply adequate capacity and pressure for normal operations.
- Old or undersized pipes in your distribution system. Small diameter piping will result in unsatisfactory flow of water, pressure loss and higher pumping cost because of friction losses. In hard water areas, old pipes become clogged with calcium, magnesium or lime deposits to the point where both pressure and capacity of water delivered through those pipes can be seriously reduced. Piping in an existing distribution system should be checked when considering a new pump installation.

Next month: How to find the best water source and get the most from it with an adequate supply of fresh, contamination-free water.

Protect cattle from diseases, make cleaning easier, reduce feed waste, get fuller benefits of mechanization by . . .

Paving Around Feed Bunks And Stock Waterers


24"
36"
4" minimum
Extra 4" thickness of paving for width of 18" along perimeter of apron will prevent trucks or tractors from crumbling edge.



Paved aprons around mechanical feed bunks eliminate muck and mire, make cleaning faster and easier, allow fuller benefits of mechanization.

Here are some suggestions to help you determine how much paving you need and how it should be put down.

Where livestock congregate to eat and drink, it usually does not take very long for muck and mire to develop, especially in wet seasons. In addition to creating a sanitation and cleaning problem, this situation is conducive to the spread of foot rot and mastitis in dairy cattle.

Further, the Arkansas Agricultural Experiment Station recently reported results of a test in which beef steers fed in paved pens had a higher rate of daily gain and better utilization of feed than did similar lots of animals confined on bermuda sod. Over a 252-day period, M. L. Ray, animal husbandryman, says the saving of feed was 1.08 pounds per pound of grain or about 500 pounds per animal.

If you are planning for an automated feed bunk or an automatic stock waterer, you should consider an adequate amount of paving as a part of the initial installation. Paving even may be regarded as an integral part of the proper installation of this equipment if it is to give the service and other benefits expected from mechanization. What constitutes an adequate amount of paving will vary with the different geographical areas and such local conditions as rainfall and drainage. Here is some general information that ought to be helpful in your planning.

Select a location that has good drainage. Paved aprons for feed bunks should extend at least 12 feet on either side with a minimum slope of ¼ inch per foot. Similarly, the apron around a stock waterer should extend 10 feet on either side from which animals have access.

Where concrete is used for paving, the thickness usually is 4 inches or the width of a dressed 2 x 4 timber. However, where the area will be used for passage of trucks or tractors (as in cleaning), the thickness should be increased to 6 inches. A thickened edge 18 inches wide along the perimeter of the apron will keep trucks and tractors from crumbling the edge. An extra 4-inch thickness is sufficient.

For paving that will withstand acids from silage and alternately wet and dry conditions, a high quality of concrete is needed. The ratio of water and cement determines strength of the mix. Agricultural engineers of the Portland Cement Association recommend six sacks of cement per cubic yard and six gallons of water per sack.

This varies slightly from the mix that is used where the feeding bunk itself is to be made of concrete. Here they recommend seven sacks of cement per cubic yard. Proper curing of the concrete for a period of 7 days will increase strength by at least 50%, 28-day curing is even better.

In finishing the paving, avoid a slick surface that will become a hazard for livestock. Broom concrete to get a slightly rough finish. If there are places where collection of ice or snow is apt to create a hazard, you can remedy this problem at the beginning by imbedding plastic or lead-covered electric heating cable in the concrete. These cables may be controlled by thermostats. The agricultural representative for your power supplier will help you determine the amount of cable you need, and advise you about how to install it. □□

Interphone Does Your Communication 'Legwork'...

Two-way farm interphone conversation between house and outbuilding lets farmer talk with wife without dropping what he is doing. If farmer wants to talk on phone directly, there it is, right on wall behind him.

If you've ever wondered at the end of a day where all that energy you woke up with has gone, just look back at your footprints. Those dogs of yours have put in a lot of mileage!

Picture this: You're out in the barn and your feed man calls on the phone. Your wife treks out to the barn (or hollers at the top of her voice), you walk to the house, handle the call, then walk back to the barn to continue. Time wasted—energy lost —money out the window.

In comparison, visualize this scene: You're out in the barn and you hear the phone ring from a large bell in the yard. You're busy, so you let the Mrs. pick it up. Seconds later her voice comes through a speaker-microphone on the barn wall— "Mr. Bailey wants to know if you need any supplement."

"Tell him to send over 500 lbs.," you answer, without stopping work.

Not a Minute Lost!

You've handled the business transaction, and you haven't lost a penny's worth of time or walked an extra inch!

That's the beauty of the "farm interphone," an intercom-telephone system especially designed for farm use, and now available from many telephone companies.

The system consists of:

1. *Two or more regular telephones—one in the house and the others in outbuildings—each interconnected with special loudspeaker-microphones on the wall near the phone.*
2. *One or more outdoor loudspeaker-microphones.*
3. *A loud outdoor bell to signal phone calls around the farmstead.*

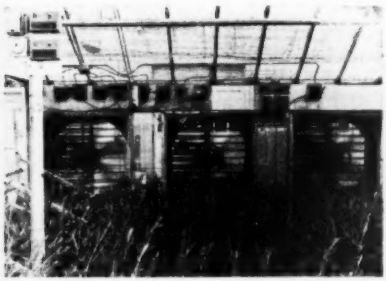
With the farm interphone, you can handle incoming or outgoing telephone calls from any one of the extension phones. In addition, the speaker-microphones at each station permit you to talk with people in other buildings on the farmstead. The outside speaker, besides being used for paging, is also a microphone, and transmits messages spoken in its direction to speakers in other buildings.

When used as an intercom, the interphone permits either private or "broadcast" conversation. If both parties use the telephones, their conversation is private. If only one party uses the telephone, the message is broadcast over all the interphone units.

Keeps an 'Ear' on the Farm

Another big "plus" of the system is its monitoring ability. It can be set so the master unit in the house can "listen in" on goings-on at other speaker locations—a valuable aid at night or when the children are playing around the farmstead. This unit operates on 115-volt current and has a 5-watt audio output.

The system, which can be adapted to the needs of almost any farm, is installed and maintained by the telephone company, with the small monthly charge going right on the telephone bill. □□



▲ **In larger greenhouse—280 x 60 feet—fans are located at center of house on either side. They pull air through pads at both ends of building. Behind growing carnations can be seen switch boxes in which overload protection is provided for each fan motor.**

◀ **Wood-fiber pad across one end of house cools air as fans pull air through it. 2-in. pipe along top of pad has holes at 6-in. intervals to drip water on pad. 1 hp centrifugal pump circulates water through pipe serving 140-ft. of pad.**

Higher quality and better growth, with . . . Cooled Carnations

Pad-and-fan evaporative cooling systems have an important part in the annual production of 2,000,000 carnations in Maier's Greenhouses, at Flat Top Mountain, North Carolina.

"Our prime objective is to reduce plant and soil temperatures," says L. F. Hines, production foreman. "By doing this we grow a better quality carnation. When temperatures are too high, plant growth is spindly and weak."

Cooling Is a Necessity

Unlike some plants which are kept in greenhouses for relatively short periods, carnations are grown at Maier's for 23 to 24 months before old plants are removed, the soil conditioned and sterilized, and a new crop started. This means that summer cooling, which has extended the usefulness of so many greenhouses, is a necessity at Maier's.

1½ Acres Under Glass

Located far up a mountainside, these greenhouses put 1½ acres under glass. They vary in size and shape, and the pad-and-fan systems are varied to fit individual houses. All fans are ¾ hp, 42-inch units, operating at 400 rpm.

In a typical 35 x 200-ft. house, four fans are mounted in one end of the building to draw air its full length. Two of these fans are thermostat-controlled to start when air temperature rises to 60°. The other two begin operating at 70°.

In one house that is 60 feet wide and 280 feet long, five fans are mounted on each side of the house at the middle and air is drawn through pads at either end. This reduces the distance that air has to be removed and makes the cooling system more effective.

In winter, Hines says he cracks roof vents about an inch and uses fans to pull fresh air into the houses. This, he observes, allows more even temperature control than is possible by merely opening vents. Sudden temperature changes cause split flowers. □□

To get more for his grain,

He Dries, Stores, Sells Out of Season

MARSHALL HARRIS makes his living by growing grain to sell. Last summer he decided it would pay him to dry and store his crops on the farm near Elizabeth City, North Carolina. He made the decision just in time to get his bins installed for the corn harvest. His production averages near a hundred bushels per acre.

Bins with combined rated capacity of 16,440 bushels represent an investment of almost $13,000. Harris expects to make the system pay off that investment in five years. He has an ASC loan for 80% of the actual cost of the bins.

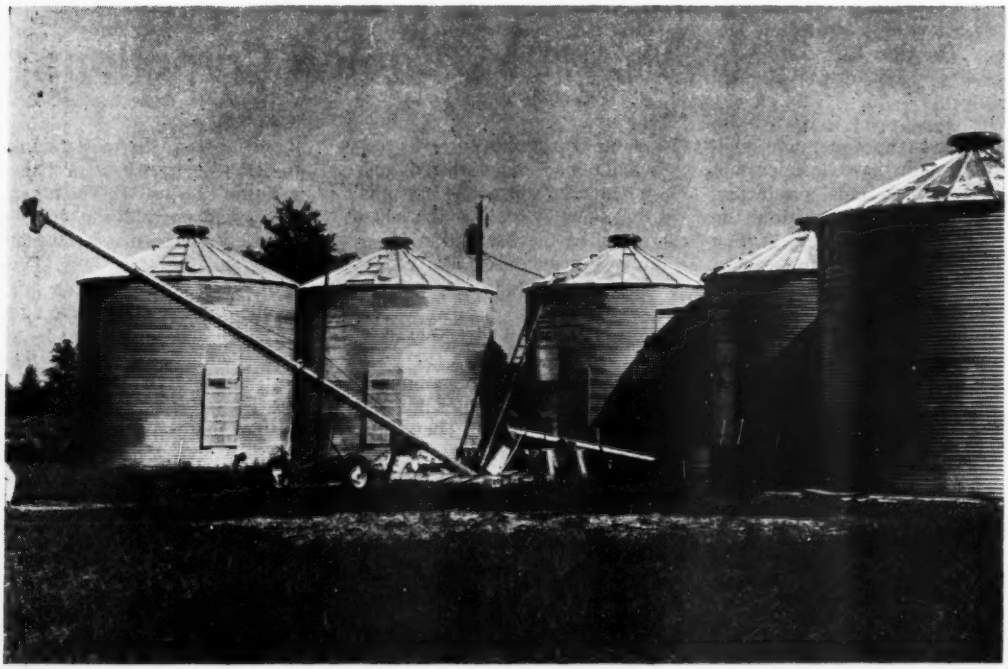
Last fall he says he dried 16,000 bushels of corn. He figures he would have received at most, a dollar per bushel for the grain if he had hauled it from field to market. After drying, it was worth $1.15. By holding it until winter or spring, he hoped for a price upswing that would bring him at least $1.25. Altogether, he expected to net a minimum of 15¢ a bushel for his efforts.

The same bins will be used in the spring and summer for wheat, oats and milo. An advantage not to be overlooked is that the drying facility enables Harris to begin harvesting fully one week earlier than normal, while moisture content of the grain is higher. Frequent rains and storms that sometimes inflict heavy field losses in his area make this feature doubly important.

The first corn he harvested last summer tested 25% moisture. Harris piled it into the bins to depths of 4½ feet, dried it down to 16 or 17%, then piled on another 4½ feet. In his system, a 22-in., 3600 rpm fan driven by a 5 hp motor forces air through the grain. Each fan is connected to two bins and has dampers in the ducts to permit its use with one or both bins. Automatic controls provide heat only as necessary to keep air dry enough to absorb moisture from the grain.

Harris says that drying a 4½-ft. depth of 25% moisture corn down to 16% required about 60 hours. Drying the second depth of 4½ ft. didn't take as long. Drying was continued in the filled bins until the moisture was down to 14%.

Mechanical grain handling is built into Harris'

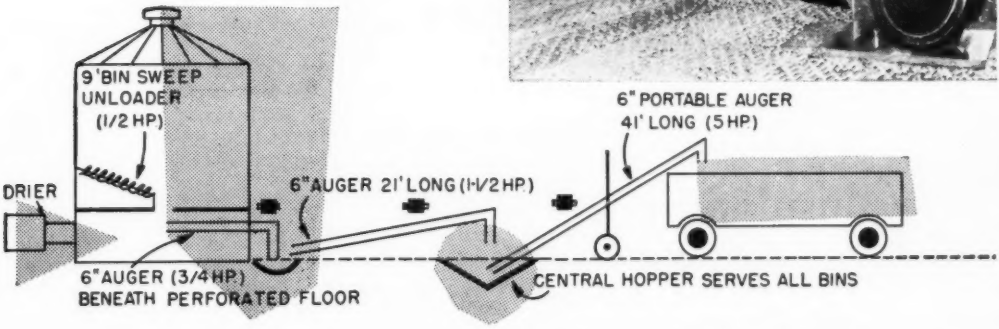


storage system. The bins are arranged in a half-circle. At the center is a ground-level hopper, into which grain is dumped from trucks. A portable auger moves it from the hopper to the bins. The 41-ft. unit conveys about 20 bushels of grain per minute.

To unload the bins, Harris uses a sweep unloader that rotates slowly inside the bin, augering grain to the opening in the center of the floor. This ½ hp unloader has a 4-in., 9-ft.-long auger which does a good job of cleaning out grain that ordinarily would have had to be moved by hand to empty the bin.

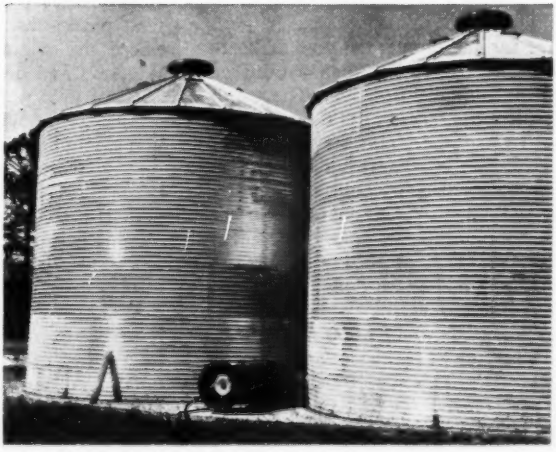
When the grain drops through the opening in the center of the perforated floor, it is picked up by a 6-in., 3 hp auger, conveyed out of the bin, and emptied into a hopper. There, another auger, 21 ft. long and powered by a 1½ hp motor, picks it up and carries it back to the central hopper that was used in filling the bin. At this point, the 41-ft. portable auger is put to use again to move the grain to trucks or trailers for its trip to market. □ □

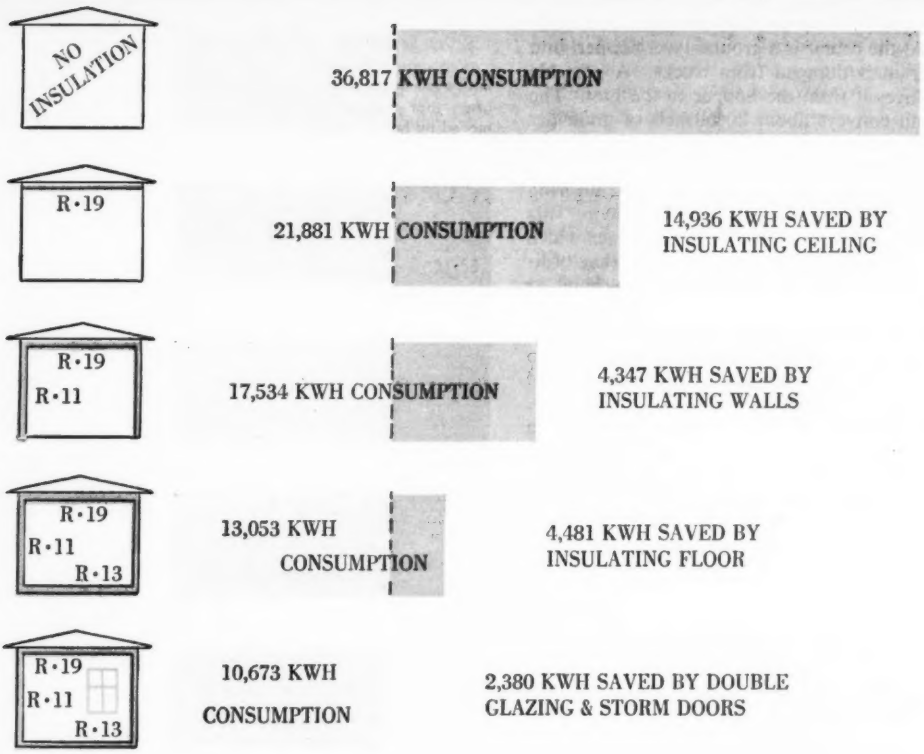
Bin-sweep auger does a good job of removing grain that ordinarily would have to be removed by hand. Auger is 9 ft. long, powered by ½ hp motor.



◀ **Set in semi-circle,** bins all feed into central hopper for loading and unloading. In this picture, augers are set up for unloading bins into trucks or trailers. Auger swings to bin-top openings for loading.

Drier has 22-in. fan driven by 5 hp motor. Air from each drier unit is moved through ducts leading to two bins, and may be directed to one or both by adjusting dampers.





How Insulation Reduces Electric Heating Costs

A good job of insulating cuts the cost of heating a house electrically to less than a third of what it would be without insulation. The graph applies to a typical house with 1,000 square feet of floor area. To read the graph, start at its top. Add ceiling insulation in recommended amounts and you cut kilowatt-hour consumption by 14,936 a year. Wall insulation takes off 4,347 KWHrs and floor insulation above a vented crawl space, 4,481. Double glazing (insulating glass or storm sash) and storm doors reduce the heating load to 10,673 KWHrs.

If your house is larger than 1,000 square feet, multiply 10,673 KWHrs by the relationship of your house size to 1,000. (A 1,200 sq. ft. house would be 1.2 x 10,673) The graph has been drawn for a 5,000 degree-day zone. Find out your number of degree days (ask your power supplier) and reduce or increase the number of KWHrs accordingly. It was also assumed that the typical house is one story high and is located where the winter design temperature is 0°F. Windows and doors were calculated to take up 20% of total wall area.

The "R" numbers indicate amounts of insulation recommended to meet the *All Weather Comfort Standard*. A mineral wool batt marked R-19 is for the ceiling, R-11 for walls and R-13 for floors. Blown mineral wool, for insulating an existing house, can be figured by the "R" system, too. The insulation contractor who blows the insulation in can do it.

With any form of insulation, a careful installation job is important. For do-it-yourself work, follow the instructions that come with the insulation. Careless workmanship will result in an incomplete barrier to heat, which won't cut heat loss as much as the graph shows. □□

SODDEN THOUGHT: A GROUNDHOG is similar to a hen-pecked husband. He makes ONE little old observation—and THEN hears about it for weeks! . . . OVERHEARD: "I call my boy friend COOKIE because he's been a WAFER so long." . . . Friend of ours says his wife's driving IS improving. Says she's NOW hitting poles and other obstacles on the RIGHT side of the road . . . SNICKERSNORT-OF-THE-MONTH: "How did you like VENICE?" "Oh, I ONLY stayed a few days. The place was FLOODED." . . . FLIP QUIP: VANITY isn't always a sin—QUITE often it's a MISTAKE . . . Want to know WHY juveniles act as they do today? It's because SO many fathers and mothers ACT like JUVENILES . . . LOVE: that which makes a woman make a man make a fool of himself . . . THOUGHT-OF-THE-MONTH: If you DON'T like a shower bath you SHOULDN'T play a TUBA in a RAINSTORM . . . WILL: a dead give-away . . . SNICKERSCOOP-OF-THE-MONTH: Story of the father who looked up from the sports pages of his evening paper, saw his young son was in need of a handkerchief, called out to his wife: "Baby's nose is running again." Her distracted reply: "Don't you EVER think of ANYTHING but HORSE RACING?" . . . OLD-SAW-NEW-TEETH DEPT.: EVERYTHING comes to him who waits—at the city dump . . . DAFFYNITION—WOMAN: a smart girl who can take a wrong number on the telephone, and nurse it from a conversation, to a date, to an engagement, to a wedding, to a honeymoon, to a life of wedded bliss, and ALL the time make the man think he was the aggressor . . . PARTING THOUGHT: HUSBANDS are to BLAME for family quarrels—they have NO right to EXPECT women to be REASONABLE . . .

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for animal-centered agriculture • irrigation • farm homes

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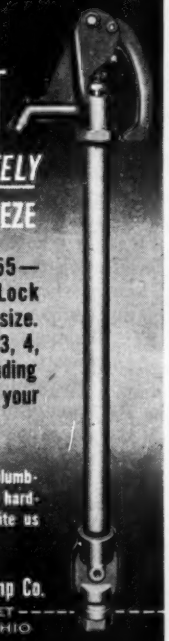

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● **EASY-TO-USE:** Starts quickly . . . Gives a steady, surge-free arc. Settings are indicated for pipe thawing, arc cutting and arc torch use. Dual welding heat settings are plainly marked, giving exact amperage needed.

● **ECONOMICAL:** Marquette '500' is built to highest standards, yet costs *less* than most ordinary welders. No moving parts to wear.

● **WORKS ON LOW VOLTAGE:** Transformer gives full 20-180 Amp. capacity, even on low voltage power lines.

● **COMPLETE:** Marquette '500' comes complete with helmet, cables and wall receptacle. No extras to buy.

● **GUARANTEED:** Full 1 year guarantee.

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Moth mangler, consisting of black-light lamp and motor which runs moth-smashing rotors, is inspected by its inventor, apple-grower Paul Stevens.

Worm-free apples, protected by Stevens' moth menace, are displayed by the grower.

Moth Mangler Keeps Worms Out of Apples

By T. A. DICKINSON

An enterprising Californian has dreamed up a novel way of killing off moth-type insects in his apple orchard, without insecticides. Paul Stevens, of Oak Glen, claims his electric "moth mangler" is even more effective than pesticides, especially when it comes to removing codling moths.

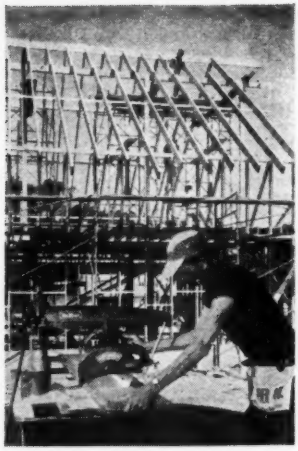
The moth mangler comprises a 15-watt "black light" bulb and two rotors turned by a fractional horsepower electric motor. The light attracts insects to the point where they can be slugged by the whirling rotor blades.

The readily-available ultraviolet bulb resembles a fluorescent tube, and draws moths to it like honey draws flies. The motor has been geared down to 1000 rpm to keep it from overheating. Each rotor consists of two heavy strands of wire mounted on the end of a drive shaft so that it resembles the letter "X." Stevens says the rotor's blades must be rigid enough to kill, but not heavy enough to create a visible barrier which frightens insects.

Stevens now uses a conventional toggle switch to turn his moth mauler on at sunset and off at dawn. But he can eventually avoid this chore by having a photoelectric switch turn it on and off automatically.

Stevens figures the tiny electric cost of the mangler is well worthwhile. There were few signs of insect damage on apples borne by trees near the new moth menace when Stevens harvested his latest crop, even though apples grown some distance away were normally "wormy" despite insecticides.

Stevens thinks his device might be even more practical in row crops where there are less obstructions as leaves and limbs to keep the light from attracting the insects. □ □



Lumber used in construction of pen barn annex at Melbourne Farm is sliced through in seconds with radial arm saw at construction site.

Electric Saw Helps Give Barn New Lease on Life

A hundred-year-old barn got a new lease on life when John Alexander purchased "Melbourne Farm" in 1958.

Alexander built his own home on the 300-acre, Big Rock, Illinois spread. He immediately set about to put up buildings to house his herd of registered Shorthorn beef cattle.

The original barn, already on the place, was 40 x 60 ft.—not nearly big enough for the herd. A 25 x 60-ft. lean-to was added on one side, and then the 35-ft. addition, pictured above, was added on the other end.

Electricity plays a big part in Melbourne Farm's operation, according to farm manager Paul Potter. The farm shop is equipped with such indispensable items as a welder, electric drill, and other power equipment. Silage unloaders, automatic watering troughs and other materials handling equipment also play big roles.

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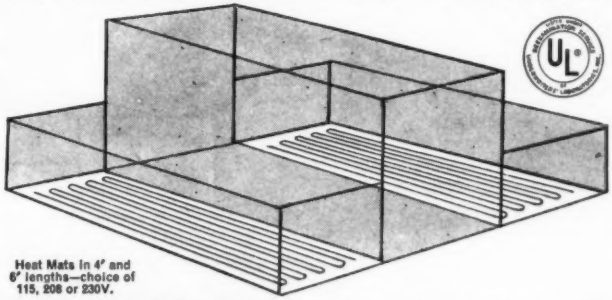

Heat Mats in 4' and 6' lengths—choice of 115, 208 or 230V.

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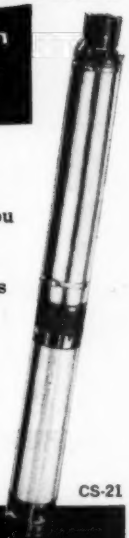

RED JACKET WATER SERVICE PRODUCTS

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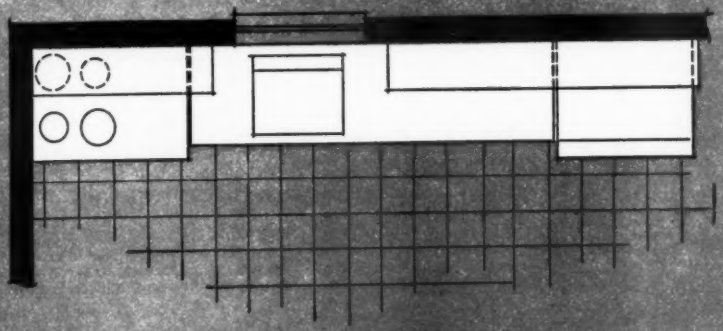
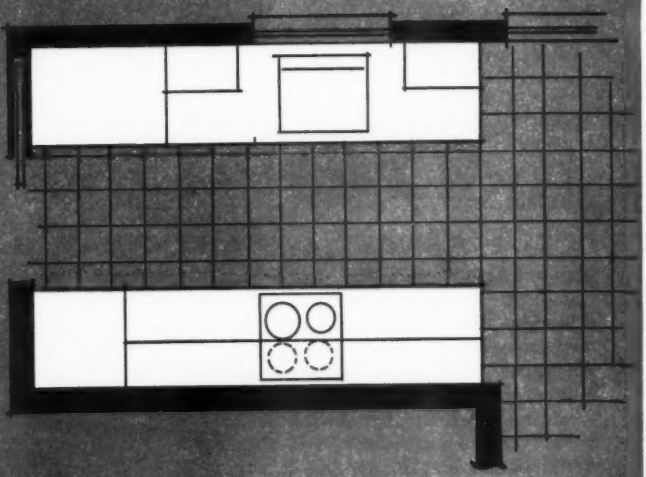
THE FARM HOME

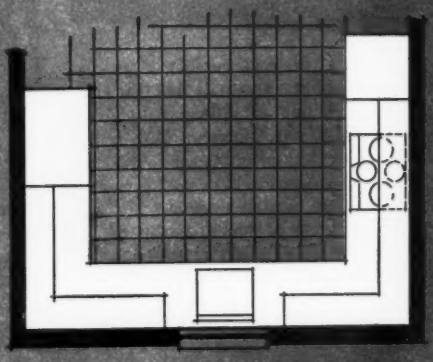
BY RUTH GAFFNEY



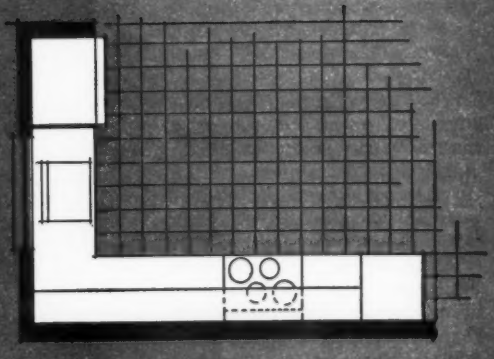
ONE WALL KITCHEN *is definitely a compromise arrangement but is good for very small areas. Suitable for summer homes or cottages.*



CORRIDOR KITCHEN *offers excellent work pattern but should not be used where there will be a lot of "traffic" through the kitchen.*



"U" SHAPED KITCHEN *is most popular layout for a kitchen. Appliances form a work "triangle" for a minimum of walking between each one.*



"L" SHAPED KITCHEN *is highly efficient and adaptable to almost any space. Also has good work "triangle." Can fit into end of kitchen or family room.*

Building or remodeling? Use this

Yardstick for Kitchen Convenience

Every family on a farm today realizes the importance of the kitchen in their home and its relation to their daily living. A lot of activity takes place there and it must be adequate to answer each family's needs. In planning a new kitchen, it's natural to think first of how the kitchen will *look*. Once it is in use, the importance of *convenience* becomes paramount.

Modern, well-designed appliances make it possible to have both an attractive and convenient kitchen. Because this will be a long-term project, it's wise to seek professional help in formulating final plans for your new kitchen, but it will make it much easier for everyone if you have some idea of your needs and what you want. Many reliable appliance dealers have kitchen specialists, and your local utility company more than likely will have a home service representative who will be able to give valuable advice.

First Important Steps

Location: consider where you will place your kitchen in relation to rest of the house. It's traditional, of course, that "company comes through the kitchen" when visiting a farmhouse. That's fine, but be sure to keep the traffic out of your path for both safety and convenience.

Locate the kitchen on the side of the house where it will be protected from coldest winds in winter and where it will get the prevailing breezes in summer. When the house is properly located, prevailing summer winds do not blow toward it from livestock barns or poultry houses.

What size? One of the recent discoveries of kitchen researchers has been that this room does not have to be large in area to take care of the needs of a large family. It should be compact in arrangement so you do not have to walk too much in preparing a meal.

Center your plan around your appliances. The basic appliances—electric range, refrigerator, sink, dishwasher—should be placed in such a way that work "flows" between them. Place the sink in your floor plan first, then put the refrigerator to the right and the range to the left. If practical, a continuous work counter should connect these appliances. Good kitchen organization will be divided up in this way:

COOKING CENTER: your electric range forms the nucleus for cooking and serving. It should be near the dining room or eating area for serving meals, and removing dishes afterwards.

CLEAN-UP CENTER: your sink-dishwasher serves both as preparation and clean-up area. You will find that you start meal preparation in this region and end it with washing the dishes. If you do not plan to include a dishwasher now, save space for one so that it could be added later without too much expense.

REFRIGERATION CENTER: your refrigerator-freezer section should be near the sink, because you remove supplies from it frequently during meal preparation. Work counter next to it also serves as mixing area for making breads, cakes and other dishes.

LAUNDRY AREA: many homemakers are including these appliances in their kitchen planning, even though it might be better to locate them in a room adjoining the kitchen. If you feel this is the most convenient for you, be sure to include a counter for sorting clothes and storage of laundry supplies.

How much storage will you need? Let's use a family of four (mother, father and two young children) as our yardstick. You can adjust this to suit your needs:

Plan to have 12 to 13 lineal feet of base cabinet storage (this will include the sink cabinet) and 9 lineal feet of wall cabinets.

(Please turn the page)

YARDSTICK FOR CONVENIENCE . . .

How to store supplies: you will reap many rewards after your kitchen is installed if you have planned space for storing utensils and foods within the area where they will be used first. For instance, put flour, sugar, spices, baking powder and other supplies within your mixing center (next to the refrigerator). Also store mixing bowls, cake pans, measuring cups and spoons, mixing tools and paring knives within this section.

In the sink area you will want to include cooking utensils, cutting tools, strainers, as well as dishwashing and cleaning supplies.

In the area of the electric range, plan for skillets, with covers, griddles, coffeemaker, and serving dishes. Also put coffee, tea and uncooked cereals within this section. Storage for china and glassware should be provided since this is your serving area.

What about work counters? If possible, provide three to four feet of counter space on each side of the sink. If the range is separated from this area, you should have at least 2 feet next to it to take care of hot dishes from the oven.

Be sure that you have a minimum of 3 feet next to the refrigerator (door should open next to—not away from this counter so that you don't "walk around the door" to get things out).

Height of work surfaces is important, especially if you are not tall. Standard base cabinets are 36″ high but it is possible to adjust this to 30″ or 32″. Yardstick for judging comfortable height depends upon your own height, posture, length of arms, and eyesight. Do a little experimenting on your own to find what is most comfortable for you.

How will you decorate your kitchen? Remember that this is a room that needs a lot of cleaning, and easy-to-maintain, long-lasting materials should be selected. You will find a large selection to choose from for walls, work surfaces, and floors. Choose colors you believe you and your family will like, but will not tire of too quickly. Textured patterns do not show soil as much as plain patterns.

Does your budget need a boost? There are a number of ways to finance kitchen remodeling. It is better—and less expensive in the long run—to do the complete kitchen, and for this reason it might be wise to get some financial help. Many kitchen and appliance dealers will offer you this service, or consult your local bank for advice. It may also be included in your present mortgage or in a G. I. loan, if you are eligible.

DO check swing of doors. Don't let a door open against the face of an appliance.

DO see that when appliances face each other across an aisle (example: a refrigerator across from a range) that the space between measures not less than 42″ to 48″.

DO make sure you have plenty of wiring—allow for future expansion, too. It's less expensive to install wiring during building or remodeling than to make additional installations later.

DO plan for a "sit-down" or "planning" area. It is less fatiguing to change positions than to remain in the same position throughout the performance of a task.

DO plan position of windows to give maximum light and ventilation.

DO place water-using appliances as close together in your plan as possible. This not only saves money but will prove to be more efficient for the operation of the appliances.

DO plan for plenty of hot water.

DO provide for good lighting over each of your work surfaces.

Don't put a wall oven in a corner. This makes it too hard to load, unload, and clean. Do not have a passageway between an oven and work surface for safety in placing hot utensils.

Don't put the refrigerator in an inaccessible nook or cubbyhole.

Don't put wall cabinets too close to the work surface—allow at least 15″ clearance between the two.

Don't place a refrigerator or dishwasher side by side. If it's unavoidable, put a 2 or 3-inch blanket of insulation between the appliances.

Don't install range and refrigerator side by side.

This kitchen won an award from local utility company because it met high standards of efficiency for layout and equipment. Mrs. Muriel Havelkas of East Alton, Ill., is proud because she designed it herself and was able to install an electric range and refrigerator —disposer and dishwasher. At built-in desk she has intercom system (also furnishes music throughout house) and telephone. Home has electric incinerator, is electrically heated.

Eye-level oven is one of the "little" features Mrs. E. W. Wallens of Asheville, North Carolina, appreciates in her new, remodeled kitchen. Pull-out wooden shelves for chopping or mixing are another. Layout was changed from a small, crowded kitchen to a spacious, modern one by removing one end of their house and adding 8' to the overall length. Half of this enlarges living area, other is used for dining.

Pump Talk by Deming

QUIZ TIME

Do you know how to estimate daily water needs?

For example, how many gallons per person per day should you figure? How many gallons per day for each horse? How about producing cows? Chickens? Your answers are—50 gallons per person; 12 gallons per day for each horse; 35 gallons for each producing cow with drinking cup. Each 100 chickens (cooped and lighted) will consume 9 gallons per day. Lots of water, and you have to plan for the proper water system to do the job.

What's Your Line?

Did you know that you are in the water business? Yes, you're actually selling water when you take your merchandise to the market. For example, milk is about 87% water. You'll increase milk production 10 to 20% if your cows can have all the water they need. Eggs are 65% water. You get larger eggs and 8 to 10% more production if your hens have lots of clean water. Meat production goes up 10 to 20% if your livestock have plenty of water. Yes, sir, you need *lots* of water!

Proper Choice

Whether you're putting in a new water system or just enlarging your old one—you'll profit by professional advice. Your DEMING pump dealer is the fellow who can save money for you, and help you make the installation an investment that will earn extra dollars for you in the years ahead. He'll know which DEMING pump to select for you. We've been making quality pumps for more than 80 years, and are proud to claim of having "The World's Most Complete Line of Water Systems." *Send in the coupon below, and we will send you complete information.*

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SPRING VEGETABLES

BRIGHTEN YOUR SPRING menus with color and variety offered by the many vegetables available at this time of year. If you're in a rut about the way you prepare them, why not surprise the family with a flavorful dish and improve appetites and health at the same time.

Secret of their flavor and goodness is care in preparation. Do not let fresh vegetables stand in water for any length of time. Scrape or pare them, if necessary, and keep cool until time to cook. Use a minimum amount of water, stir as little as possible. Cover utensil to shorten cooking time and *do not overcook.*

Tender carrots

1 pound carrots
¾ teaspoon Ac'cent
2 tblsp. butter
1 tblsp. fine dry bread crumbs
1 tsp. lemon juice
Parsley, finely chopped

Scrape carrots or pare thinly. Cut julienne style. Place in 1 inch boiling salted water. Add Ac'cent. Cover and cook over medium heat 10 to 14 minutes, or until tender. While carrots are cooking, melt butter. Stir in bread crumbs and lemon juice. Pour over hot cooked carrots; sprinkle with parsley. Serves 4.

Spring Casserole

2 tblsp. butter
1 tsp. onion powder
3 cups bite-size toasted corn cereal, crushed to 1⅓ cups
2½ cups medium white sauce
¼ teaspoon onion juice
Dash tabasco sauce
1 can (2 oz.) mushrooms
2 cups fresh peas, slightly cooked, or 1 package frozen peas
2 lbs. tiny new potatoes, cooked and peeled

Preheat oven to 325°F. Butter 2-qt. baking dish. Melt butter and onion powder over low heat. Stir in cereal crumbs; heat and stir until crumbs are coated. Combine white sauce, salt, onion juice and tabasco sauce; mix well. If frozen peas are used, rinse in warm water, then drain. Add mushrooms, peas and potatoes to white sauce and mix well. Pour into baking dish and top with crumbs. Bake 45 minutes or until bubbly. Serves 4.

String Bean Delight

Cut tender green beans crosswise on bias. Saute in butter in large electric skillet, then cover and finish cooking at low setting in the juice from the beans. Fresh dill or tarragon from the garden is ideal as a final touch.

Tomatoes Supreme

Cut firm, ripe tomatoes in half. Place them, cut side up, in buttered baking pan and sprinkle with salt and freshly ground pepper. Chop equal amounts of small spring onions and parsley (enough to generously cover each tomato half), combine with softened butter and spread this mixture on top of tomatoes. Bake in 400° F. oven for 10 minutes, or until tender.

No More Hands-and-Knees Floor Scrubbing

By BARBARA CLOSE
Hillsboro, Illinois

Homemakers need no longer dread the task of cleaning floors. An electric floor washer is now available to help do the job.

Miss Eloise Lorch, of the University of Illinois home management department, says the electric floor washer resembles an upright vacuum cleaner but, made of soft plastic, weighs less than a vacuum cleaner. A special compartment holds the water and detergent. This compartment can be removed from the machine for easy filling. Firm brushes do the scrubbing while you guide the washer over the floor. Machine can be used on tile or other hard-surface flooring.

The washer works in much the same way as a vacuum cleaner. Dirty water and suds are vacuumed into a plastic bag, eliminating mop wringing. The bag can be emptied without your hands touching the water, and you control the amount of scrubbing and water used on the floor.

This new floor washer will help homemakers who have many floors to care for and limited time. It will especially benefit the homemaker whose health makes this task almost impossible. □□

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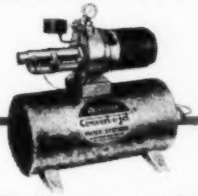

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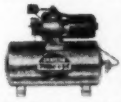

DEMPSTER PRIME-O-JET, the low-cost, high quality, self-priming shallow well systems—⅓ or ½ HP—capacities to 1,010 gph, maximum suction lift 25 ft. Pressure tank or Matched-Flow (with mounted 4 gal. tank) models.

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4566—Slimming half-size sheath. Note smartly draped shoulder. Printed Pattern in Sizes 12½-22½. Size 16½ takes 3 yards 39-inch fabric. 35¢

9253—Casual dress with buttoned bodice, six-gore skirt. Printed Pattern in Half Sizes 12½-24½. 16½ takes 4⅞ yards 35-inch fabric. 35¢

9488—Sun dress and bolero feature tab-and-button detail. Printed Pattern in Half Sizes 14½-24½. Size 16½ dress takes 4¼ yards 35-inch fabric; bolero 2⅛ yards. 50¢

4697—One-piece playsuit turns into a pretty dress when you add the skirt. Printed Pattern in Misses' Sizes 10-20. Size 16 outfit takes 5¾ yards 35-inch fabric. 35¢

4667—Square-neck sun sheath, tucked jacket. Printed Pattern in Misses Sizes 12-20. Size 16 dress: 3⅛ yards 35-inch fabric; jacket 1½ yards. 35¢

4906—Dipping yoke, stand-up collar are smart fashion touches for this slim-lined sheath. Printed Pattern in Misses' Sizes 10-18. Size 16 takes 3¼ yards 35-inch fabric. 35¢

PATTERN 9488 is FIFTY CENTS. PATTERNS 4566, 9253, 4697, 4667, 4906 are THIRTY-FIVE CENTS each. Add 10¢ each for 1st-class mailing. Send 35¢ for full-color Fashion Catalog.

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Pattern Department, P.O. Box 122,
Old Chelsea Station, New York 11, N. Y.

To promote egg sales, Bush is experimenting with a new carton with colorful picture of vegetable salad bowl topped with egg slices.

Producers like Bush can't add to the quality of eggs, but they can retain original quality by using refrigerated storage rooms with proper temperature and humidity controls.

He C's* How to Keep Quality in the Egg

*Cooling
*Cleanliness
*Candling

We asked Florida poultryman Sam Bush to name the factors he considers important in getting a quality egg from farm to market. His answer: cooling, cleanliness and candling.

Bush keeps 10,000 layers on his Breezy Hill Farm at New Port Richey. At Breezy Hill, his formula for quality eggs begins with frequent collections—three to five times a day. Eggs are mechanically washed and graded, stacked on flats and moved into the refrigerated storage room for pre-cooling before going into cases.

The washer and grader are new equipment at Breezy Hill. The washer momentarily sprays hot water onto eggs, rolls them against soft nylon brushes for cleaning, then conveys them through an air tunnel for drying. This equipment, which handles 14 cases per hour, has reduced breakage in processing by 60%.

Keeping water temperature higher than that of the eggs is very important, Bush says, to keep the water from penetrating shell and damaging egg. With the new washer, breakage has been reduced 60%, and working conditions improved immeasurably. For space reasons, he located the washer and grader so that they form a "V." He believes the operation might be improved further by enlarging the 14 x 24-ft. room to permit a straight-line arrangement.

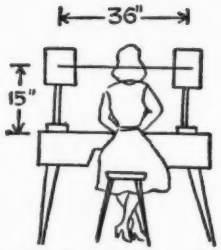
A ¾-ton window air conditioner and a ¾ hp refrigeration unit keep working conditions in the processing room comfortable.

The 14 x 8-ft. egg storage room is cooled by a 1 hp egg cooling unit. Humidity is maintained at 80%, temperature at 50°. The room has 6 in. of insulation in ceiling and beneath wooden floor, and 4-in. insulating batts in walls, with vapor barriers inside and outside. A factory-built door has rubber gaskets to insure a tight seal.

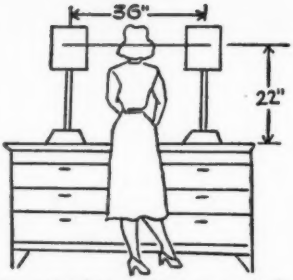
Mechanical washer sprays water onto eggs at 120°, turns them against nylon brushes, then conveys them through air tunnel for drying.

Addition of mechanical processing equipment was an essential step for him, Bush says. He figures the installation, which could be duplicated for about $2500, will pay for itself in one year.

Now that he is geared to produce top-quality eggs, Bush is turning his attention to finding ways of getting the public to buy more. One idea he is trying is a new carton with a mouth-watering picture of a vegetable salad topped with slices of boiled egg.



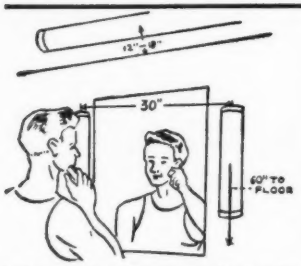
Lamp Height (seated). Have shade center 15″ above 30″ dressing table or at face level.



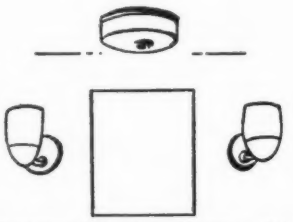
Lamp Height (standing). Have shade center 22″ above 36″-high dresser or at face level.

Light for Good Grooming

Part VII
By A. V. KREWATCH*



Bathroom Light, Fluorescent. Wall units—use one 20-watt homeline tube on each side. On ceiling, use two 15-watt homeline tubes or one 32-watt circular fluorescent. Shielding over tube is preferable.



Bathroom Light, Incandescent. Wall and ceiling fixtures shielded by opal or ceramic-enameled glassware. Minimum 60 watts in each unit; or two-socket unit with 40 watts in each socket.

Good light makes good grooming easier, quicker, and surer. We all know that our friends, family and co-workers appreciate the well-groomed person. Whether visiting, at a conference, or at work, it is important to keep up that attractive appearance from dawn 'til evening.

For the ladies, the kind and amount of light used for applying make-up is very important. Embarrassing moments of too much or too little make-up can be avoided if you provide good light.

You can make up in good light if you provide a light-conditioned good-grooming center. Also, a good clean shave or precise make-up is easier in a well-lighted bathroom. A recommended light level is 20 foot-candles on the face.

To have this amount of light, your make-up center requires two lamps with shades at cheek level. Use 30/100-watt, 3-light, medium-base bulbs or 100-watt white bulbs in each lamp. Top of bulb should be at least 2″ below shade top. Harp or clip-on shade holders are preferred.

For some situations, pin-up lamps or fixtures may be needed. Place at face level and as near 36″ apart as possible. Use shade material that is highly translucent, such as fiberglass, luminous plastic or silk, to let light flow through to the face. Color should be palest ivory or white. If strong color is desired, confine it to trim. Minimum shade size should be 7″ top, 7″ deep, 9″ bottom.

Install bathroom lighting fixtures where they do the most good. For shaving and make-up, you need three fixtures. Light each side of the mirror and put another fixture directly above the basin.

Wall fixtures should be placed 30″ apart and centered 60″ from the floor. The ceiling fixture, which is very necessary, is located 12-18″ from the wall, directly above the front edge of the basin. □□

** Member "Four-State Lighting Committee" consisting of representation from Agric. Extension Services of Univ. of Md., Penna. State Univ., Va. Polytechnic Inst., West Va. Univ., and Resid. Dept. of Potomac Edison Co.*

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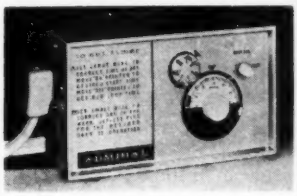
What's New

Air Conditioner Timer

Totally automatic operation of your air conditioner is now possible with a new timer that programs a full-week's operation. Desired "off" and "on" times as



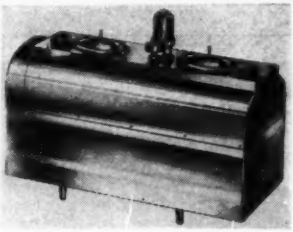
well as days of operation are set on two dials. Since conditioner can now be set to run only when needed, timer saves on operating costs.—Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.

Electric Epicure's Cookbook

How to get the most out of your electric kitchen is the subject covered in *The Electric Epicure's Cookbook*, by Poppy Cannon. Included are 300 easy-to-follow recipes for gourmet dishes, using electric kitchen appliances. —Thomas F. Crowell Co., 432 Fourth Ave., New York 16, N. Y.

Bulk Milk Cooler

A vacuum type ice-bank bulk milk cooler incorporating a new "Whirling Hurricane" washer de-



vice is now available from Dairy Equipment Company, Madison, Wisconsin.

Lighting Booklet

A newly revised and up-dated version of Sylvania's popular *Bright Ideas for Brighter Living* booklet is now available.—Sylvania Electric Prods., Inc., 1100 Main St., Buffalo, N. Y.

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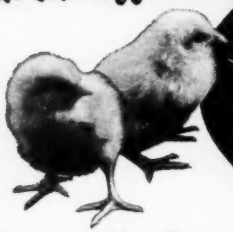

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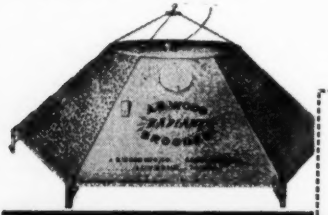

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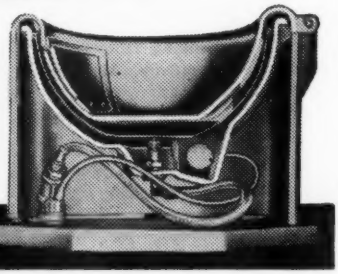

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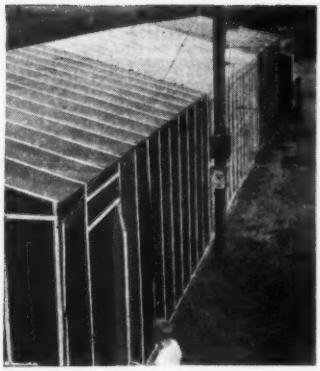

Plastic barn is economical, easy to build. It is divided into three equal sections, covered with 4-mil black plastic and clear plastic.

Labor Saving Aromatic Tobacco Curing Barn

One of the few crops of which this country doesn't produce a surplus is aromatic tobacco. In fact, production is only a small percentage of what is needed for domestic markets. Chief reason for this under-production is that about 650 man-hours per acre are needed to produce the crop.

Research aimed at saving labor in harvesting and curing has been going on for years. Last year, J. A. Martin, associate horticulturist at South Carolina's Clemson College, used an economical plastic barn with labor-saving features to cure what he called the best quality aromatic tobacco ever grown at Clemson.

The experimental barn, designed to serve a 3-acre planting, is 80 x 21 feet. The size can be varied to give whatever

Leaves are strung on wires and placed on 7-ft. metal racks. Note fiber pad behind boys, which, by moisture evaporation, humidifies air.

Metal racks are suspended from boards mounted to roll along six overhead tracks. Tracks extend length of building.

capacity desired. A set of 6 overhead tracks extending lengthwise facilitates tobacco movement through the curing process.

Air movement, temperature and humidity are important factors in curing aromatic tobacco. Stagnant air, says Martin, is one cause of mold, so he uses a pad-and-fan air circulation system with two fans at one end of the house and an aspen-wood fiber pad across the other end. The fans move 19,000 cfm of air through the house to give a change of air about once every minute. Controlled by a time clock, fans operate from 7 a.m. until 7 p.m. Barn is closed at night.

Humidity is controlled by moisture evaporation from a wood fiber pad through which the fans pull air into the house. A solenoid valve, humidistat-controlled, allows water to seep over pad for desired humidity.

Under typical operating conditions, Martin says, air pulled into the barn at 82° was exhausted at 92°. Similarly, humidity dropped from 60° as the air began its journey through the tobacco at 55% at the other end of the barn. He suggests that where the barn is a gabled structure, baffles at intervals above tobacco give better air circulation through leaves.

Preliminary findings indicate that no artificial heat was needed in the Clemson area. Clear plastic admits ultraviolet rays, allowing the curing process to approach very closely natural sunlight curing conditions.

Divided into three equal sections, the barn is covered on either end with 4-mil black polyethylene and in the center with clear plastic. Materials used in construction, including the tracks, cost about $1200.

Primed for six weeks or longer, tobacco leaves are brought into the end of the barn opposite the fans. They are strung on 20-in. wires which are put into 7-ft. metal racks. Filled racks are suspended from 8-ft.-long 2 x 4 boards mounted to roll along the tracks.

Martin says tobacco is held in the first section beneath the black plastic for wilting, an operation that normally requires two days. Then racks are pushed along tracks into second section, beneath clear plastic, where leaves are exposed to sunlight for 7 to 9 days. After this, racks are pushed into third section, where leaves are removed and baled as soon as stems are dried. □□

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Research Notes

By J. P. SCHAENZER

Average weekly weights of mixed-sex broilers were as follows: one week—0.19 lbs., 2—0.37, 3—0.65, 4—1.04, 5—1.51, 6—1.99, 7—2.50, 8—3.01, 9—3.57, and 10 weeks—4.05 lbs.—UNIV. OF NEW HAMPSHIRE, REED AND SKOGLUND

Dairy cows enrolled in the National Cooperative Dairy Herd Improvement Assn. in 1958 made an average net profit of $78, while the average U. S. dairy cow returned $28.—USDA, ARS

Mechanical harvesting of red tart cherries under conditions existing in many orchards will enable 7 men to do the work of 33 hand-pickers and reduce harvesting costs by 50%.—UNIV. OF MICHIGAN

Rice with more than 14% moisture content should be dried promptly to maintain its grade, viability and high milling yield.—UNIV. OF ARKANSAS, XZIN MCNEAL

A 16-week-old pullet costs an average of $1.21 when raised on the farm, as compared with $1.80 at the same age when purchased, according to a survey of 61 poultry farms.—OKLAHOMA STATE UNIV., DAVIS AND MATHIA

Up to 50 gallons of liquid manure can be lifted 7 ft. from a storage tank to a tank wagon with a 4-in., 11-ft.-long auger driven by a 1 hp motor.—UNIV. OF ILLINOIS, H. H. KLUETER

If a home freezer fails to operate, 25 lbs. of dry ice should keep a 10 cu. ft. cabinet below freezing for 2 to 3 days with half a load, and 3 to 4 days if full.—USDA, INSTITUTE OF HOME ECONOMICS

Louvers have been designed to completely keep out the light ordinarily coming through ventilating openings without restricting air flow.—K. W. WESTERBERG, SAVAGE, MINNESOTA.

Laying house temperatures above 70° exert a detrimental effect on egg shell quality.—UNIV. OF IDAHO

Sweet corn, irrigated with an average of 3.4 in. of water, produced an average of 119 ears per 100 plants, each ear weighing 12.2 oz., as compared with 109 ears weighing 10.7 oz. each for non-irrigated plants.—CORNELL UNIV., M. T. WITTUM

Fried frozen chicken changes flavor fairly rapidly unless it is stored at 0° to −10° no more than 6 months.—UNIV. OF CALIFORNIA

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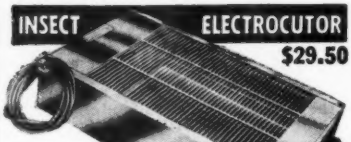

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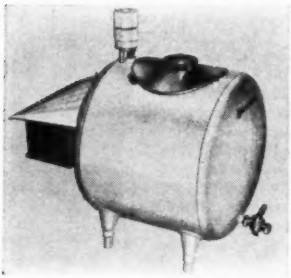

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Questions and Answers

Egg Room Vapor Barrier

Q. *We are building a 7 x 7 x 6½ (Inside dimensions) insulated egg cooling room. Where should the vapor barrier be placed?* C. H.—Ohio

A. The rules say to place the vapor barrier on the warm side of the wall to prevent moisture migration into the insulation. (Moisture tends to move from warm to cool areas.) The inside temperature of your egg-cooling room, which should be kept at 50-55° F, could very well be warmer than the surrounding air in the winter season and cooler in the summer. Therefore, we would recommend that you use types of insulation such as some of the polystyrene (Styrofoam) or polyurethane materials that are impervious to moisture and need no vapor barrier.

Washing Orlon Blankets

Q. *Can you give me some hints on the best method for machine washing an "Orlon" blanket?* D. P., Delaware

A. If blanket has spots or badly soiled bindings, pretreat with a synthetic detergent or soap solution. Wash only one blanket at a time, for about 5 minutes, using warm suds (100°F.) of detergent, or soap plus water softener. To air dry, remove blanket after two or three minutes of final spin cycle and hang evenly over a clean clothesline. If home dryer is used, tumble at low heat (120-140°F.) for about 20 minutes, remove blanket as soon as the machine stops. When dry, fluff up the nap with a soft brush. If bindings need pressing use steam iron, or a dry iron at the rayon or synthetic setting.

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Tobacco Irrigation Tests

In experiments at the University of Florida last year, irrigation influenced the value of the tobacco harvest by as much as $411 per acre. The study was made by J. Mostella Myers, agricultural engineer, and Fred Clark, agronomist.

By assuming the daily water use of tobacco in different stages of growth, they compared no-delay, 3-day-delay and 6-day-delay irrigation with unirrigated plots. Here is what they found:

Irrigation influenced both yield per acre and quality, with the difference in quality reflected in the price received per pound. Unirrigated tobacco produced 1205 lbs. per acre, sold for 58.5c per lb., grossed $705. Harvest from the no-delay irrigated crop was 1780 lbs. per acre, sold for 62.7c per lb., grossed $1116. Rainfall between March 31 and June 25 totaled 12.96 inches. In this interval, the no-delay crop received 7.54 inches of moisture in 12 different applications. A complete comparison is given in Table 1.

The daily water use of tobacco is shown in Table 2. In the no-delay plots, Myers and Clark supplemented rainfall to supply all the moisture they assumed the plants would use.

On the 3-day-delay plots, they measured rainfall and put off irrigation until three days after the crop was assumed to have used all the moisture in the soil. The 6-day-delay treatment worked similarly. As a result, the 3-day-delay required only 7 irrigations totaling 5.07 inches and the 6-day-delay four applications totaling 2.43 inches.

As a rule of thumb for lighter soils like those found in much of Florida and other parts of the tobacco belt, Myers suggests that tobacco needs water about every fifth day. The range is from 4 to 7 days, depending upon wind, temperature and soil. For the first three weeks after transplanting, he suggests wetting the ground to a depth of 6 inches, for the next two weeks to a depth of 12 inches, and to a depth of 18 inches for the remainder of the season. Roughly .3 inch of water is required for each 6 inches of depth.

Myers also says that farmers with small tobacco acreage will find a sprinkler irrigation system with 2-inch distribution pipes economical. An electric pump of less than 5 hp should give ample capacity for most any situation.

Table 2—Assumed Water Use by Tobacco for "No Delay" Irrigation Treatment

Days after Transplanting	*Inches Per Day*
1-7	.06
8-14	.08
15-21	.10
22-28	.11
29-35	.13
36-42	.16
43-49	.22
50-56	.25
57-63	.22
64-70	.16
71-77	.15
78-84	.14
85-91	.13

Table 1—Rainfall, Irrigation and Yield

Irrigation Treatment	*Rainfall * (Inches)*	*Irrigation (Applications)*	*(Inches)*	*Yield (Lbs/A)*	*Price (¢/lb.)*	*Value ($/A)*
No Delay	12.96	12	7.24	1,780	62.7	1,116
3-day delay	12.96	7	5.07	1,768	62.0	1,096
6-day delay	12.96	4	2.43	1,610	61.4	989
None	12.96	0		1,205	58.5	705

* March 31—June 25

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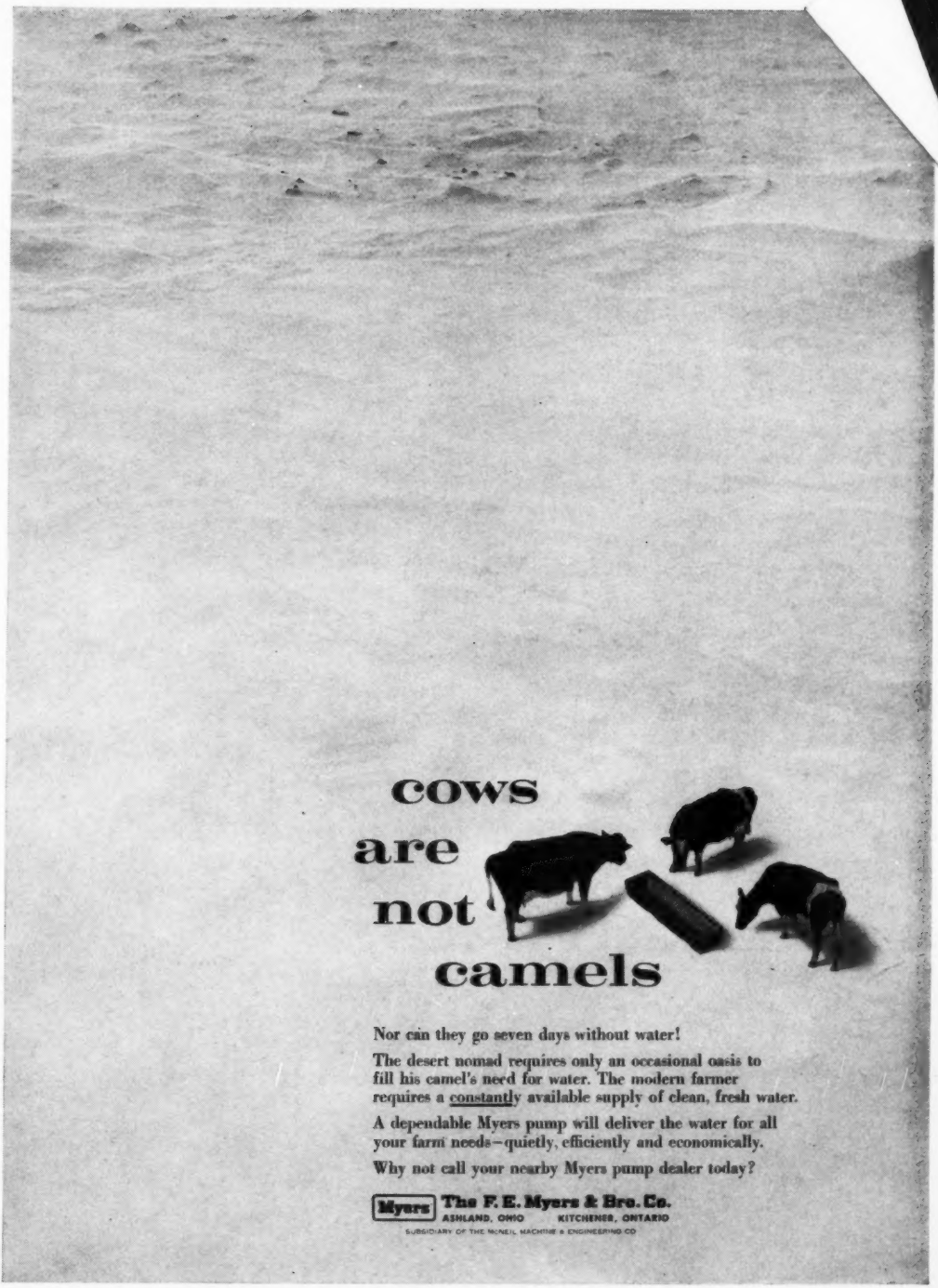

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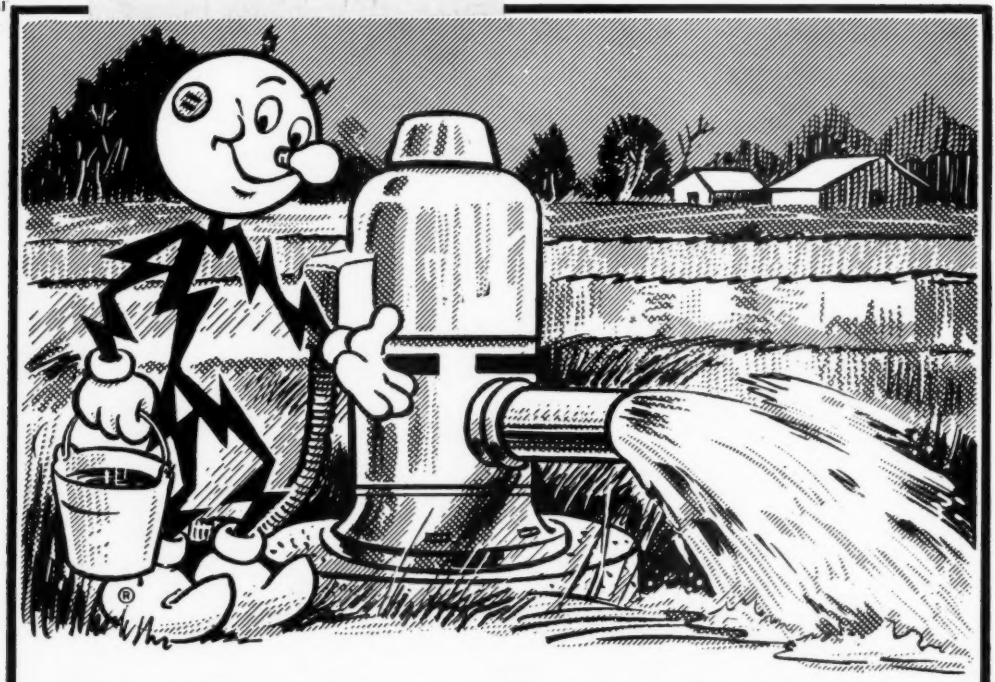

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